Name:

at1118paper: Complete the Square (v413)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 30x = -209$$

Add $\left(\frac{-30}{2}\right)^2$, which equals 225, to both sides of the equation.

$$x^2 - 30x + 225 = 16$$

Factor the left side.

$$(x - 15)^2 = 16$$

Undo the squaring. We need to consider both $\pm\sqrt{16}$.

$$x - 15 = -4 \quad \text{or} \quad x - 15 = 4$$
$$x = 11 \quad \text{or} \quad x = 19$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 - 38x = 215$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 + 36x = 1792$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 34x \;=\; 1475$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 32x \;=\; -247$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 - 10x \;=\; 144$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 50x \;=\; 336$$